

Attorney Docket No. P08430-US3

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims

1-20. (Canceled)

~~21.~~ (Previously Presented) A method for including Frame Time Indication for cell searching in a wireless communications system, said method comprising:

transmitting by a mobile station, in each slot of a frame a primary synchronization code and a secondary synchronization code, said secondary synchronization code comprising $\log_2(N_{ssc})$ bits of information to be used for a long code indication; and

modulating said secondary synchronization code by one of N_{mod} valid sequences.

El Cont. ~~22.~~ (Previously Presented) The method of claim ~~21~~, wherein said primary synchronization code of said secondary synchronization code are transmitted at substantially the same time.

~~23.~~ (Previously Presented) The method of claim ~~21~~, wherein said N_{mod} value is greater than one.

~~24.~~ (Currently Amended) ~~The method of claim 21, A method of including Frame Time Indication for cell searching in a wireless communications system, said method comprising:~~

transmitting by a mobile station, in each slot of a frame, a primary synchronization code and a secondary synchronization code, said secondary synchronization code comprising $\log_2(N_{ssc})$ bits of information to be used for a long code indication; and

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modulating the secondary synchronization code by one of Nmod valid sequences;

wherein the following properties ~~need to~~ must be satisfied if said the Nmod value is greater than one:

~~each said the~~ secondary synchronization code has sufficient cross-correlation properties; and

no cyclic shift of a valid modulating sequence can result in another valid modulating sequence.

4
25. (Previously Presented) The method of claim 21, wherein said secondary synchronization codes are the same in each slot.

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26. (Previously Presented) The method of claim 21, wherein said wireless communication system is a WCDMA communication system.

7
27. (Previously Presented) A method for including Frame Time Indication for cell searching by a mobile station, said method comprising:

transmitting, by a mobile station, in each frame, a sequence of about 16 secondary synchronization codes, said secondary synchronization codes comprising Log2 (Nssc_seq) bits of information to be used to obtain a long code indication; and

modulating said secondary synchronization code by one of Nmod valid sequences.

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28. (Previously Presented) The method of claim 27, wherein said sequence of about 16 secondary synchronization codes repeats in each frame.

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29. (Previously Presented) The method of claim 27, wherein each said secondary synchronization code is unique.

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¹⁰
~~30.~~ (Previously Presented) The method of claim ~~27~~⁷, wherein each said secondary synchronization code is unique and further has auto correlation and cross correlation properties.

¹¹
~~31.~~ (Previously Presented) The method of claim ~~27~~⁷, further comprising:
finding a valid secondary synchronization code sequence; and
determining a frame timing indication based on said valid secondary synchronization code.

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¹²
~~32.~~ (Previously Presented) The method of claim ~~27~~⁷, wherein said long code indication can have 65,536 different values.

¹³
~~33.~~ (Previously Presented) A method for facilitating cell searches in a cellular communications system, comprising:

generating, by a base station, an identifying code set;

transmitting, by said base station, at least one code word included in said identifying code set, said identifying code set comprising a plurality of code words each including a plurality of symbols taken from a set of short codes, each code word of said plurality of code words defined such that no symbol-wise cyclic shift of said each code word produces a valid code word.

¹⁴
~~34.~~ (Currently Amended) The method of Claim ~~33~~¹³, wherein said plurality of code words comprises a plurality of Q-ary code words, and said set of short codes comprises a set of Q short codes.

¹⁵
~~35.~~ (Previously Presented) The method of Claim ~~34~~¹⁴, wherein said plurality of Q-ary code words comprises a plurality of length M Q-ary code symbols.

¹⁶
~~36.~~ (Previously Presented) The method of claim ~~35~~¹³, wherein said identifying code is formed by concatenating an inner and out code.

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~~17~~
~~37~~. (Previously Presented) The method of claim ~~16~~ 36, wherein said inner code comprises a tailbiting trellis code.

~~18~~
~~38~~. (Previously Presented) The method of claim ~~16~~ 38, wherein said outer code comprises a binary code.

~~19~~
~~39~~. (Previously Presented) The method of claim ~~17~~ 37, wherein said tailbiting trellis code comprises an orthogonal trellis code.

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~~20~~
~~40~~. (Previously Presented) The method of claim ~~17~~ 37, wherein said tailbiting trellis code comprises a superorthogonal trellis code.

~~21~~
~~41~~. (Previously Presented) The method of Claim ~~14~~ 34, wherein the short codes within the set of Q short codes are orthogonal short codes.

~~22~~
~~42~~. (Previously Presented) A method for a mobile station to decode an identifying code transmitted from a base station in a CDMA cellular communications system, comprising the steps of:

collecting k times M consecutive symbols, said M consecutive symbols comprising said identifying code;

calculating a combined likelihood value for said collected k times M consecutive symbols, thereby producing a set of M consecutive symbols;

computing a correlation between each of L code words and each of M cyclic shifts of said sets of M combined likelihood values; and

storing a code word and number of cyclical shifts made that produced a highest amount of correlation in the computing step.

~~23~~
~~43~~. (Previously Presented) The method of Claim ~~22~~ 42, wherein said number of cyclical shifts made indicate a frame timing for said identifying code.

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²⁴
~~44~~. (Previously Presented) The method of Claim ²³~~42~~, further comprising the step of outputting an identity of said stored code word.

²⁵
~~45~~. (Previously Presented) A method for a mobile station to decode an identifying code transmitted from a base station in a CDMA cellular communications system, comprising the steps of:

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collecting k times M consecutive symbols, said M consecutive symbols comprising said identifying code;

calculating a combined likelihood value for said collected k times M consecutive symbols, thereby producing a set of M consecutive symbols;

computing a correlation between said set of M combined likelihood values and each of M cyclic shifts of said L code words; and

storing a code word and number of cyclical shifts made that produced a highest amount of correlation in the computing step.

²⁶
~~46~~. (Previously Presented) The method of Claim ²⁵~~45~~, wherein said number of cyclical shifts made indicate a frame timing for said identifying code.

²⁷
~~47~~. (Previously Presented) The method of Claim ²⁵~~46~~, further comprising the step of outputting an identity of said stored code word.